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The Relative Importance of Target and Judge Characteristics in Shaping the Moral Circle

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Abstract

People's treatment of others (humans, nonhuman animals, or other entities) often depends on whether they think the entity is worthy of moral concern. Recent work has begun to investigate which entities are included in a person's moral circle, examining how certain target characteristics (e.g., species category, perceived intelligence) and judge characteristics (e.g., empathy, political orientation) shape moral inclusion. However, the relative importance of target and judge characteristics in predicting moral inclusion remains unclear. When predicting whether a person will deem an entity worthy of moral consideration, how important is it to know who is making the judgment (i.e., characteristics of the judge), who is being judged (i.e., characteristics of the target), and potential interactions between the two factors? Here, we address this foundational question by conducting a variance component analysis of the moral circle. In two studies with participants from the Netherlands, the United States, the United Kingdom, and Australia ($N = 836$), we test how much variance in judgments of moral concern is explained by between-target differences, between-judge differences, and by the interaction between the two factors. We consistently find that all three components explain substantial amounts of variance in judgments of moral concern. Our findings provide two important insights. First, an increased focus on interactions between target and judge characteristics is needed, as these interactions explain as much variance as target and judge characteristics separately. Second, any theoretical account that aims to provide an accurate description of moral inclusion needs to consider target characteristics, judge characteristics, and their interaction.

Keywords: Moral circle; Moral judgment; Nonhuman animals; Multilevel modeling

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1. Introduction

In May 2021, the UK Government announced that animals will be formally recognized as sentient beings. This is just one example of a historical trend toward the moral inclusion of more humans and nonhumans, which has been referred to as the expanding moral circle (Singer, 1981). The moral circle captures the extent to which we consider different entities worthy of moral concern. This concept originated in philosophy, but recent years have seen a burst of psychological research attempting to chart and understand people's moral circles (Crimston, Bain, Hornsey, & Bastian, 2016; Goodwin, 2015; Waytz, Iyer, Young, Haidt, & Graham, 2019).

A growing body of research is trying to chart which targets tend to be included or excluded from people's moral circle. Work on the Moral Expansiveness Scale, an individual difference measure that aims to capture the size of people's moral circle, has consistently shown that people typically ascribe most moral standing to family and friends, followed by human in-groups and out-groups, high- and low-sentience sentient animals, plants and, finally, villains (e.g., murderers), who are granted the lowest moral standing (Crimston et al., 2016; Neldner, Crimston, Wilks, Redshaw, & Nielsen, 2018). Thus, different targets are afforded different levels of moral standing and researchers have started to examine which target characteristics predict whether people include them in their moral circle, including sentience (Gray, Young, & Waytz, 2012; Leach et al., 2021; Rottman et al., 2021), intelligence (Caviola et al., 2022; Wilks & Caviola et al., 2021), species category (Caviola, Everett, & Faber, 2019), similarity to humans (Miralles, Raymond, & Lecointre, 2019), beauty (Klebl, Luo, Tan, Ping Ern, & Bastian, 2021), and moral badness (Piazza, Landy, & Goodwin, 2014).

Fewer studies have focused on exploring the role of individual differences (i.e., characteristics of the judge) in shaping the moral circle. Recent studies have found that children (Helenser Kozachenko & Piazza, 2021; McGuire et al., 2022; Reinecke et al., 2021; Wilks, Caviola, Kahane, & Bloom, 2021), women (Caviola et al., 2019; Graça, Manuela, Oliveira, & Milfont, 2018) and liberals (Waytz et al., 2019) appear to show more moral concern for others. Additionally, work by Crimston and colleagues (2016) on the Moral Expansiveness Scale showed that a range of psychological factors were associated with a wider moral circle, including empathic concern, compassion, identification with all of humanity, endorsement of certain moral foundations, fears of compassion, generalized trust, and beliefs about the "fabric of society" (see also Crimston, Blessing, Gilbert, & Kirby, 2022, Kirkland et al., 2022).

Target and judge characteristics might also interact to explain judgments of moral concern. For example, some people may consistently show more moral concern for other humans, but not nonhuman animals. Relatively few studies have investigated such interactions. Waytz and colleagues (2019) found a larger difference in moral concern for humans versus animals among more conservative participants. Both Leite and colleagues (2019) and Krings and colleagues (2021) found that differences in moral concern for various categories of animals were influenced by individual differences in human supremacy beliefs. Going beyond attributions of moral standing, recent research also points to other interactions between target and judge characteristics in the moral domain. For example, social discounting rates (i.e., reduced

altruistic motivations for targets that are socially more distant) were much less pronounced among "extraordinary altruists" (e.g., kidney donors; Rhoads et al., 2021; 2023). Moreover, research by Earp and colleagues (2021) demonstrates that social relationships shape our expectations about different types of sociomoral transgressions. In short, moral judgments, and ascriptions of moral standing in particular, often vary depending on who judges (or interacts with) whom.

Previous work has consistently shown that different people afford different levels of moral standing to different targets. But there is still a limited understanding of what explains this variation in judgments of moral concern. At a very basic level, this variation may be due to between-target differences (i.e., some targets are consistently judged as more worthy of moral concern), between-judge differences (i.e., some people consistently judge others as more worthy or moral concern), or interactions between these two factors (i.e., some people extend more moral concern to some specific targets). The majority of previous work has investigated the role of different target characteristics (e.g., perceived intelligence, sentience, or beauty), but it is not clear if target characteristics actually explain most variance in moral concern and should, therefore, be prioritized. Very few studies have examined interactions between target and judge characteristics, but it is not clear if these interactions explain so little variance in moral concern that they can be somewhat neglected. Here, we address these questions by conducting a variance component analysis of the moral circle.

1.1. Mapping the variance components of the moral circle

Generally speaking, the key focus of previous work on the moral circle has been on understanding under what circumstances a person will or will not deem an entity worthy of moral concern. This raises a foundational question: When trying to predict whether a certain person will deem a certain target worthy of moral concern, how important is it to know who is making the judgment (i.e., characteristics of the judge), who is being judged (i.e., characteristics of the target), and potential interactions between the two factors? To put this question in statistical terms: How much variance in judgments of moral concern is explained by between-judge differences, by between-target differences, and by the interaction between the two factors? In the present studies, we address this foundational question by estimating the variance components of the moral circle.

The inspiration for this approach is drawn from Hehman and colleagues (2017), who investigated the role of judge characteristics, target characteristics, and their interaction in shaping first impressions. The majority of research on first impressions has focused on target-level explanations, investigating how target characteristics such as facial morphology (Said, Sebe, & Todorov, 2009), skin texture (Jaeger, Wagemans, Evans, & van Beest, 2018), and emotional expressions (Sutherland, Young, & Rhodes, 2017), influence first impressions. Yet, a variance component analysis of first impressions revealed that target characteristics only explain 15–25% of the variance in impressions, whereas judge characteristics and the interaction between judge and target characteristics often explained as much, or even more variance (Hehman, Sutherland, Flake, & Slepian, 2017; Xie, Flake, & Hehman, 2019). These findings have important implications. They reveal that the field's almost exclusive focus on target

characteristics in impression formation is too narrow. Crucially, any theory that only focuses on target characteristics will be incomplete and poor at predicting how first impressions are formed. These insights have already spurred research on levels of analysis that had been largely ignored thus far to gain a better understanding of the determinants of first impressions (Cook et al., 2022; Jaeger, Jones, Satchell, Schild, & Van Leeuwen, 2022; Stolier et al., 2018). The variance decomposition approach has also been applied to other areas of research to better understand the relative importance of target and judge characteristics, for example, in predicting humor appreciation (Rosenbusch et al., 2022) and attractiveness perception (Hönekopp, 2006).

Here, we take a similar approach. In two studies, we asked participants from four Western countries (the Netherlands, Australia, the United States, and the United Kingdom) to judge the moral standing of different entities. Following previous work, we estimate cross-classified multilevel regression models to estimate how much variance in judgments of moral concern is explained by between-judge differences, between-target differences, and their interaction (Hehman et al., 2017; Hönekopp, 2006; Rosenbusch et al., 2022).

This method does not give insights into *which* judge or target characteristics explain judgments of moral concern, which has been the primary focus of existing work. In our studies, we also explore associations between moral concern and various judge characteristics (e.g., gender, political orientation) and target characteristics (e.g., in-group vs. out-group members, companion animals vs. farm animals). However, our primary focus lies on decomposing the variance components of the moral circle, which provides several important theoretical and practical insights. The estimates indicate how much each level of analysis (the judge, the target, and their interaction) contributes to variation in judgments of moral concern. This provides insights into (a) whether studies have previously been focusing too much on one level of analysis, and (b) which levels of analysis future studies should focus on. Previous work on the moral circle has mostly focused on either target *or* judge characteristics with most studies focusing on the former. Few studies have modeled both types of characteristics at the same time or considered interactions between target and judge characteristics. Our approach shows whether this focus is justified, or whether there is a mismatch between which factors have received most attention in prior research and which factors are actually most important for explaining moral standing.

To illustrate the potential implications of our analyses for the field, we consider three plausible scenarios. First, our analyses might reveal that one factor explains most of the variance. For example, between-judge differences may explain much more variance in moral concern compared to between-target differences. Thus, while some target characteristics, such as similarity to humans (Miralles et al., 2019) or beauty (Klebl et al., 2021), may explain *some* variance, their overall importance for explaining judgments of moral concern could be very limited. In this case, more work should focus on understanding the role of judge characteristics (note that the opposite pattern might also emerge implying that the current primary focus on target characteristics is somewhat justified).

Second, our analyses might reveal that interactions between target and judge characteristics explain a considerable amount of variance. This would suggest that future studies should

focus more on exploring these interactions, an approach that has not received much attention thus far.

Third, our analyses might reveal that all three levels of analysis explain nontrivial amounts of variance. This would imply that research should explore all three levels of analysis. More importantly, this would also imply that any theory that aims to model and predict judgments of moral concern needs to consider characteristics of the target, characteristics of the judge, and their interaction. Any theory of the moral circle that only focuses on one level of analysis would be incomplete and poor at predicting moral inclusion. In short, charting the variance components of the moral circle will reveal which levels of analysis researchers should focus on when trying to explain judgments of moral concern.

We present the results of two exploratory studies (Study 1: 255 participants providing 15,300 judgments, Study 2: 581 participants providing 62,748 judgments). Although our main goal is to estimate the variance components of the moral circle, our studies also make several other contributions to the literature. We recruit participants from four countries (the Netherlands, the United States, the United Kingdom, and Australia) who, especially in Study 2, judge the moral standing of a large set of targets (different groups of humans, nonhuman animals, and other entities, such as plants or mountains). Thus, the current studies also provide a rich descriptive account of how people think about the moral standing of various entities and how this varies across countries. All data and analysis scripts are available at the Open Science Framework (https://osf.io/8cjn6/).

2. Study 1

The main goal of Study 1 ($n = 255$ providing 15,300 judgments) was to estimate the variance structure of participants' moral circle. We recruited first-year psychology students from a Dutch university who rated the moral standing of 30 animals, and we estimated how much variance in moral concern was explained by judge characteristics, target characteristics, and their interaction. Past work has identified substantial variability in our attitudes toward different animals (Henseler Kozachenko & Piazza, 2021; Wilks et al., 2021).

2.1. Methods

2.1.1. Participants

We recruited first-year psychology students from a Dutch university who completed the study in return for partial course credit. We are not aware of any method that allows one to estimate how many participants are required to estimate variance components with a given level of precision. We aimed to collect at least 200 participants as prior work suggests that relatively precise estimates can be obtained with this sample size (e.g., Rosenbusch et al., 2022, Study 3; Xie et al., 2019, Study 2). The survey remained open until no additional participant completed the study within a span of 3 days, which resulted in a final sample of 258 participants. Data from three participants (1.16%) who indicated having only a poor English proficiency were excluded, leaving a final sample of 255 participants ($M_{age} = 19.84$

Table 1
Demographic characteristics of participants in Studies 1 and 2

	Study 1 (NL)	Study 2 (Full)	Study 2 (US)	Study 2 (UK)	Study 2 (AU)
Sample size	255	581	191	195	195
Gender					
Female (%)	84.71	54.91	58.12	59.49	47.18
Male (%)	14.90	43.03	39.27	37.95	51.79
Nonbinary (%)	0.39	2.07	2.62	2.56	1.03
Age					
Mean	19.84	35.63	34.10	38.40	34.37
Median	19.00	32.00	31.00	35.00	31.00
SD	2.55	13.29	12.61	15.08	11.56
Religious (%)	–	25.30	35.60	21.54	18.97
Political orientation					
Left (%)	–	56.45	59.69	52.82	56.92
Center (%)	–	27.54	21.47	31.28	29.74
Right (%)	–	15.66	18.85	15.38	12.82

years, $SD_{age} = 2.55$; 84.71% female, 14.90% male, 0.39% nonbinary; see Table 1). Retaining these participants in our analysis did not lead to any meaningful changes in results. The study design was approved by the local Ethics Review Board and all participants provided informed consent prior to participation.

2.1.2. Stimuli and procedure

We created a diverse list of 30 nonhuman animals that were the targets of participants' moral judgments. We sampled companion animals (e.g., dog, cat), farm animals (e.g., pigs, cows), wild animals that are common in participants' local environment (e.g., pigeons, bees), and more "exotic" wild animals (e.g., lions, orangutans). We sampled at least one mammal, bird, reptile, fish, and invertebrate and included animals that are commonly seen in a positive light (e.g., chimpanzees, elephants) or negative light (e.g., spiders, snakes; see the Supplementary Materials for a complete list of targets). Following previous work (e.g., Laham, 2009, Leite, Dhont, & Hodson, 2019), we measured moral concern by asking participants to rate the extent to which they "feel obligated to show moral concern for the welfare and interest" of each animal on a scale that ranged from 1 (*absolutely no obligation*) to 9 (*very strong obligation*). Participants provided two sets of ratings. That is, after rating all 30 targets, they were asked to rate all targets again. Targets were displayed in a different random order each time. Multiple ratings of each target by each judge help to separate the variance in ratings that is explained by stable, idiosyncratic judgments of a specific target by a specific judge (i.e., judge-by-target interactions) from variance in ratings resulting from error or noise (Hehman et al., 2017; Hönekopp, 2006; Xie et al., 2019). After completing a different study on dietary preferences, participants indicated their gender, age, and English proficiency.

2.1.3. Analysis strategy

When observations are nested within clusters (e.g., when a single participant provides multiple data points in a repeated-measures design), traditional linear regression models can yield biased estimates because they do not account for variation between clusters (Judd, Westfall, & Kenny, 2012). Multilevel regression models account for the nested structure of the data by estimating what percentage of variance is accounted for by different clusters (Raudenbush & Bryk, 2002). While multilevel models are useful for estimating fixed effects when the data are nested, they can also be used to estimate variance components (Hehman et al., 2017; Hönekopp, 2006; Xie et al., 2019). With a cross-classified multilevel model that includes random effects for participants, targets, and their interaction, we can calculate the intraclass correlation coefficient (ICC), which quantifies how much variance is explained by each factor (Shrout & Fleiss, 1979). In the current study, the participant-specific ICC indicates how much variance in moral concern is explained by between-judge differences, the target-specific ICC indicates how much variance is explained by between-target differences, and the ICC for the participant-by-target interaction indicates how much variance is explained by the interaction between between-judge and between-target differences.

All analyses were conducted in R (R Core Team, 2021). To estimate the different variance components, we followed the procedure outlined by Hehman and colleagues (2017). We estimated a cross-classified intercept-only multilevel regression model using the lme4 package (Bates, Mächler, Bolker, & Walker, 2015). Our analysis was based on a total of 15,300 judgments with individual judgments nested within judges (i.e., each judge rated multiple targets) and within targets (i.e., each target was rated by multiple judges). Simulations by Xie and colleagues (2019) showed that 6,000 observations are required to obtain relatively reliable estimates of variance components. Although the exact sample size requirement may vary across different studies, both of our studies were based on substantially larger samples (Study 1: 15,300 observations; Study 2: 62,748 observations), which suggests that our studies had sufficient power to yield relatively reliable estimates.

2.2. Results

2.2.1. Variance components

To address our main question, we estimated the variance components of participants' judgments of moral concern (see Fig. 1). Results showed that between-target differences explained most variance (39.77%, 95% CI [28.01%, 52.75%]), followed by between-judge differences (28.61%, 95% CI [21.42%, 35.43%]), and the judge × target interaction (27.11%, 95% CI [21.01%, 32.47%]). The residual variance was small (4.52%, 95% CI [3.50%, 5.42%]) and the three factors combined explained more than 95% of the variance in judgments of moral concern. Each factor accounted for a considerable amount of variance, suggesting that judgments of moral concern are influenced by judge characteristics, target characteristic, and the interaction between judge and target characteristics.

2.2.2. Judge and target characteristics

We also explored which judge and target characteristics influenced judgments of moral concern. Average ratings for all animals are displayed in Fig. 2. In line with previous work

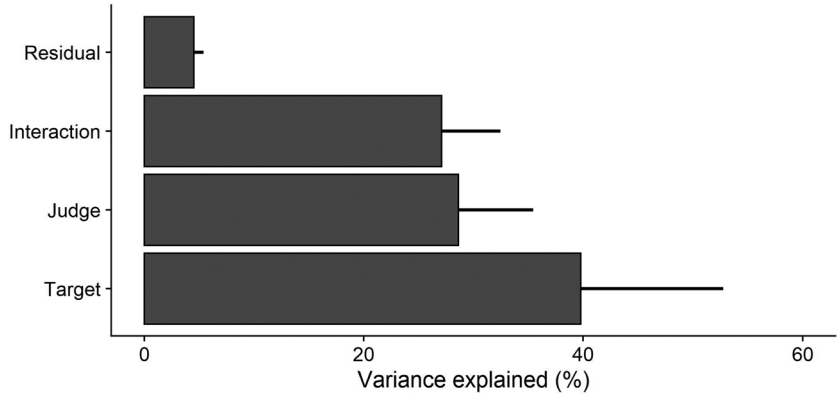

Fig. 1. Relative contributions of target characteristics, judge characteristics, and the interaction between judge and target characteristics in explaining variation in judgments of moral concern.
Note. Error bars represent bootstrapped 95% confidence intervals.

(Leite et al., 2019), we found that participants showed more moral concern for companion animals (i.e., dogs, cats, rabbits, horses; $M = 7.52$, $SD = 1.77$) than for food animals (i.e., cows, sheep, pigs, goats, chickens; $M = 6.58$, $SD = 1.90$), $t(488.7) = 6.80$, $p < .001$, $d = 0.59$, 95% CI [0.48, 0.69]. Animals that are often viewed as pests (i.e., rats, spiders, ants, flies) were rated as least deserving of moral concern ($M = 3.17$, $SD = 2.27$, comparison with companion animals: $t(254) = 85.54$, $p < .001$, $d = 2.51$, 95% CI [2.24, 2.79], comparison with food animals: $t(500.0) = 20.96$, $p < .001$, $d = 1.84$, 95% CI [1.66, 2.02]).

To examine the role of judge characteristics, we estimated a multilevel regression model with random intercepts per judge, target, and judge-by-target combination and random slopes per target. Regressing moral concern on participants' gender, $b = -0.223$, $SE = 0.264$, 95% CI [−0.741, 0.296], $t(243) = 0.84$, $p = .401$, and age, $b = 0.035$, $SE = 0.037$, 95% CI [−0.038, 0.108], $t(243) = 0.93$, $p = .351$, did not reveal any significant associations.

2.3. Discussion

Study 1 provided the first insights into the role of judge and target characteristics in shaping the moral circle. We found that between-target differences (40%), between-judge differences (29%), and their interaction (27%) explained considerable amounts of variance in judgments of moral concern. Thus, in order to predict whether a certain person will grant moral standing to a certain target, one needs to consider not only the target being judged (which has been the focus of the majority of research in this field to date), but also the characteristics of the person making the judgment, and the interaction between the two. Put differently, an exclusive focus on target characteristics, which has been common in existing work on this topic, cannot be

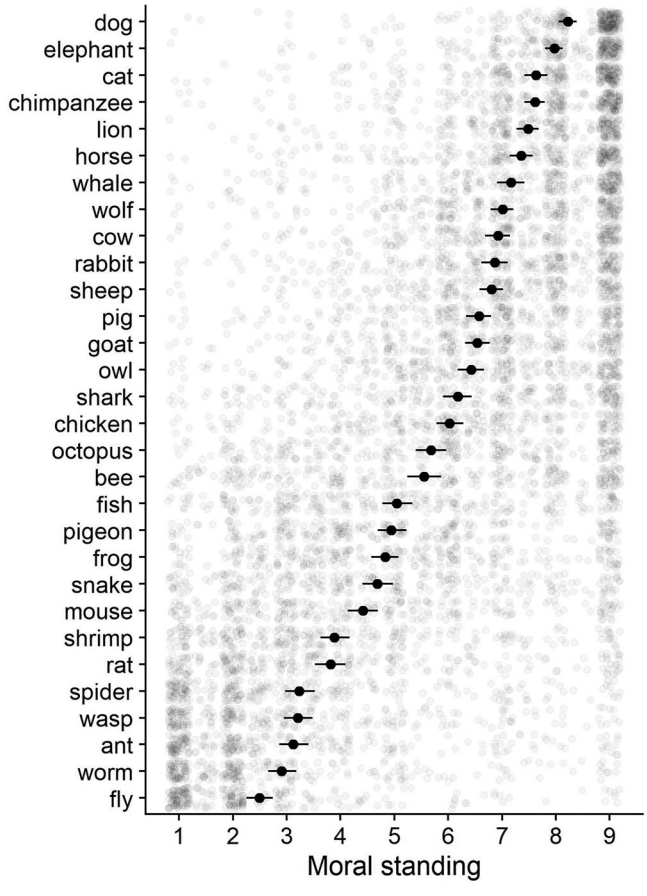

Fig. 2. Average moral standing of each target.
Note. Error bars represent 95% confidence intervals.

expected to yield precise predictions on whether a certain person will grant moral standing to a certain target.

We also offer new data to inform our understanding of how people value animals. Here, we find that pests are granted less moral status, which aligns with past research showing that disliked animals are generally granted less moral status (Piazza et al., 2014). Moreover, we replicate past work showing that companion animals are valued more than food animals (Leite et al., 2019).

Although our results show that judgments of moral concern vary considerably across different judges, the two variables that we examined here, participants' gender and age, did not show significant associations with moral concern. This was somewhat surprising, as other work suggests that both of these factors impact attitudes toward animals (Caviola et al., 2019; Wilks et al., 2021). However, past studies have identified these differences when comparing

attitudes toward people and animals, whereas our study examined attitudes toward animals only. Additionally, our sample was young, primarily female, and attending university. These characteristics are typically associated with high concern for animals (i.e., among veg*ns). As such, these demographic traits may have been less diagnostic for predicting moral concern in the current sample. It seems, then, that other judge characteristics may show stronger associations with moral concern when comparisons are made between different animals. In Study 2, we, therefore, included a broader array of targets and measured a greater number of judge characteristics.

3. Study 2

In Study 2, we again estimated the variance components of participants' moral circle, but we made two key improvements to the study design. First, we recruited a larger and more diverse sample of participants ($n = 581$ providing 62,748 judgments). We recruited participants from Australia, the United Kingdom, and the United States, which allowed us to compare the variance component structure of people's moral circle across different countries. Second, we sampled a larger and more diverse set of targets, focusing not only on animals. Following the work by Crimston and colleagues (2016), we examined moral concern for eight groups of targets, with three targets for per group: family and friends, in-group targets (e.g., coworkers), out-group targets (e.g., foreign citizens), revered targets (e.g., charity workers), stigmatized targets (e.g., refugees), villains (e.g., murderers), plants (e.g., apple trees), and the environment (e.g., coral reefs).

3.1. Methods

3.1.1. Participants

As in Study 1, we intended to sample approximately 200 participants per country, which should yield relatively precise estimates of the variance components (Rosenbusch et al., 2022; Xie et al., 2019). We requested 600 participants from Prolific and received 598 completed surveys. Data from 17 participants (2.84%) who opted out of disclosing their nationality were excluded, leaving a final sample of 581 participants ($M_{age} = 35.63$ years, $SD_{age} = 13.29$; 54.91% female, 43.03% male, 2.07% nonbinary; see Table 1), consisting of 195 participants from Australia, 195 participants from the United Kingdom, and 191 participants from the United States. The study design was approved by the local Ethics Review Board and all participants provided informed consent prior to participation.

3.1.2. Stimuli and procedure

The study design was similar to the design of Study 1, but we used an expanded set of targets. Next to the 30 nonhuman animals used in Study 1, we included 24 additional targets taken from the studies by Crimston and colleagues (2016). We included three targets for each of the eight groups: family and friends (e.g., spouses), ingroup (e.g., coworker)s, outgroup (e.g., foreign citizens), revered targets (e.g., charity workers), stigmatized targets (e.g.,

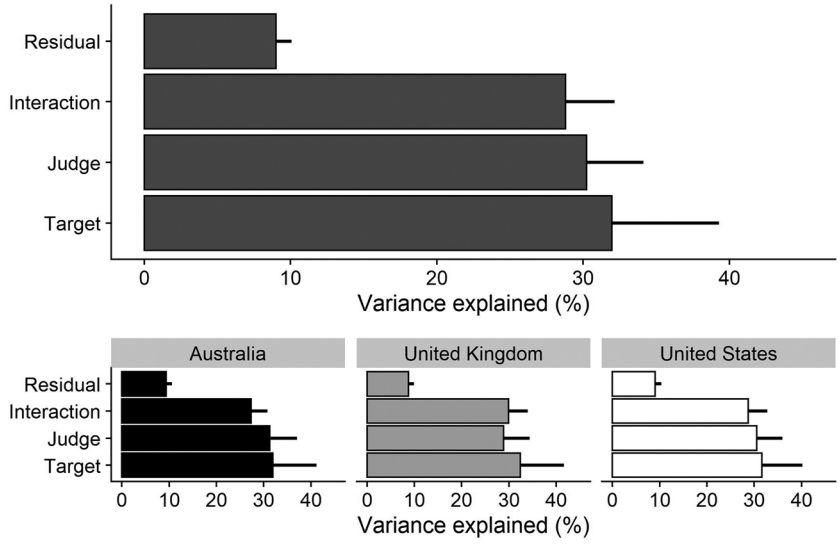

Fig. 3. Relative contributions of target characteristics, judge characteristics, and the interaction between judge and target characteristics in explaining variation in judgments of moral concern.
Note. Error bars represent bootstrapped 95% confidence intervals.

refugees), villains (e.g., murderers), plants (e.g., apple trees), and the environment (e.g., coral reefs; see the Supplementary Materials for a complete list of targets). As in Study 1, participants rated the extent to which they "feel obligated to show moral concern for the welfare and interest" of each target on a scale that ranged from 1 (*absolutely no obligation*) to 9 (*very strong obligation*). Participants provided two sets of ratings and all targets were displayed in a random order. After completing a different study on dietary preferences, participants completed several demographic questions. We assessed their gender, age, and nationality. We also assessed their religiousness (measured with a single binary item asking participants whether they would describe themselves as) and their political orientation (measured with a 7-point scale that ranged from strongly left wing to center to strongly right wing).

3.1.3. Analysis strategy

We followed the same analysis strategy as in Study 1. Our main analysis, for which we estimated the variance components for the entire sample, was based on a total of 62,748 judgments.

3.2. Results

3.2.1. Variance components

First, we examined the variance components of participants' judgments of moral concern (see Fig. 3, top panel). Results showed that between-target differences explained most variance (31.95%, 95% CI [23.90%, 40.17%]), followed by between-judge differences

(30.23%, 95% CI [25.99%, 34.54%]), and the judge × target interaction (28.80%, 95% CI [25.06%, 32.37%]). The residual variance was small (9.02%, 95% CI [7.83%, 10.15%]) and the three factors combined explained more than 90% of the variance in judgments of moral concern. As in Study 1, each factor accounted for a considerable amount of variance, suggesting that judgments of moral concern are influenced by target characteristics, judge characteristic, and the interaction between target and judge characteristics.

3.2.2. Cross-country differences

Next, we examined similarities and differences across the three countries. We separately estimated the variance components for participants from Australia ($n = 195$), the United Kingdom ($n = 195$), and the United States ($n = 191$; see Fig. 3, bottom panel). Judge characteristics explained 31.32% of the variance (95% CI [25.43%, 37.24%]) for Australian participants, 28.91% of the variance (95% CI [23.23%, 34.55%]) for participants from the United Kingdom, and 30.60% of the variance (95% CI [24.94%, 36.35%]) for participants from the United States. Target characteristics explained 31.99% of the variance (95% CI [23.45%, 40.84%]) for Australian participants, 32.45% of the variance (95% CI [23.91%, 41.29%]) for participants from the United Kingdom, and 31.67% of the variance (95% CI [23.52%, 39.99%]) for participants from the United States. The interaction between judge and target characteristics explained 27.32% of the variance (95% CI [23.40%, 31.00%]) for Australian participants, 29.93% of the variance (95% CI [25.60%, 34.05%]) for participants from the United Kingdom, and 28.72% of the variance (95% CI [24.87%, 32.35%]) for participants from the United States. Thus, the variance structure of the participants' moral circle was very similar across the three countries.

Average judgments of moral concern for the different targets were also remarkably similar across the three countries. Fig. 4 shows the average rating for each target in each country sorted from highest to lowest (based on the combined sample). Correlations between targets' average moral concern were almost perfect (Australia vs. UK: $r(52) = .994$, 95% CI [.989, .996], $p < .001$, Australia vs. US: $r(52) = .991$, 95% CI [.984, .995], $p < .001$, UK vs. US: $r(52) = .988$, 95% CI [.979, .993], $p < .001$).

3.2.3. Judge and target characteristics

We also explored which judge and target characteristics influenced judgments of moral concern. In line with previous work (Leite et al., 2019) and replicating the results of Study 1, we found that participants showed greater moral concern for companion animals (i.e., dogs, cats, horses, rabbits; $M = 6.26$, $SD = 2.14$) than for food animals (i.e., cows, sheep, pigs, goats, chickens; $M = 5.41$, $SD = 2.20$), $t(1142) = 7.33$, $p < .001$, $d = 0.42$, 95% CI [0.38, 0.46]. Animals that are often viewed as pests (i.e., rats, spiders, ants, flies) were rated as least deserving of moral concern ($M = 3.43$, $SD = 2.33$, comparison with companion animals: $t(580) = 81.50$, $p < .001$, $d = 1.43$, 95% CI [1.33, 1.54], comparison with food animals: $t(1160) = 16.17$, $p < .001$, $d = 0.95$, 95% CI [0.87, 1.02]).

Results for the other targets showed that participants reported the greatest moral concern for family and friends (e.g., spouses; $M = 8.43$, $SD = 1.22$), followed by stigmatized targets (e.g., refugees; $M = 7.18$, $SD = 1.90$), in-group targets (e.g., coworkers; $M = 7.01$,

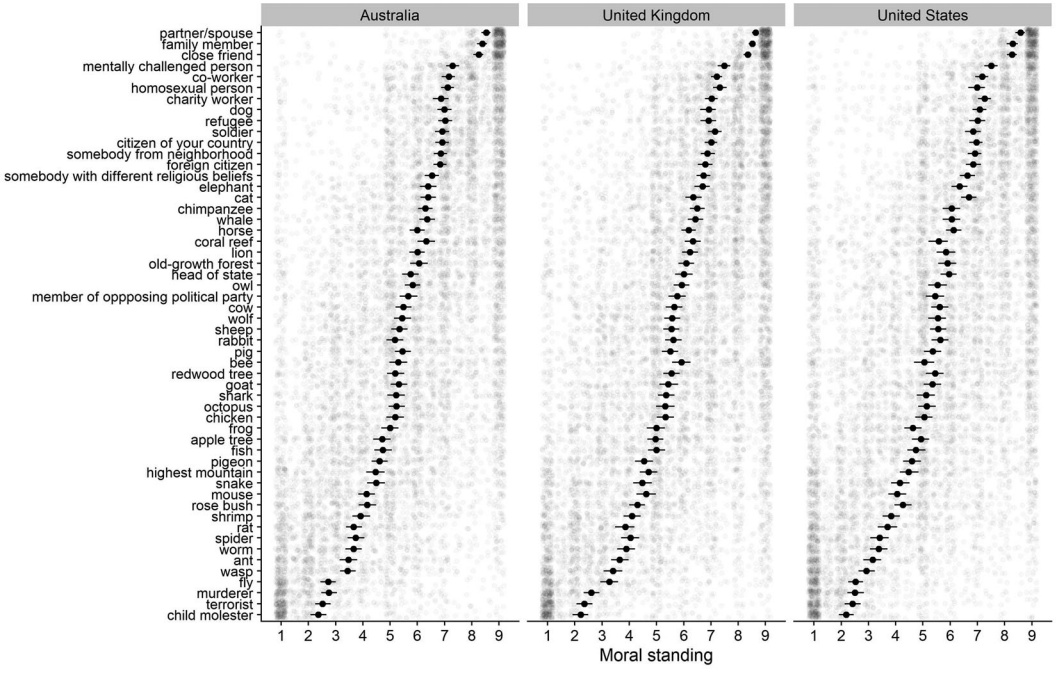

Fig. 4. Average moral standing of each target across the three countries.
Note. Error bars represent 95% confidence intervals.

$SD = 1.73$), revered targets (e.g., charity workers; $M = 6.64$, $SD = 2.07$), out-group (e.g., foreign citizens; $M = 6.36$, $SD = 2.11$), the environment (e.g., coral reefs; $M = 5.55$, $SD = 2.44$), plants (e.g., apple trees; $M = 4.83$, $SD = 2.28$), and villains (e.g., murderers; $M = 2.44$, $SD = 2.04$). This ranking in moral standing generally replicates the overall pattern found by Crimston and colleagues (2016).

To examine the role of judge characteristics, we estimated a multilevel regression model with random intercepts per judge, target, and judge-by-target interactions and random slopes per target. We regressed ratings of moral concern on participants' gender, age, nationality, religiousness, political orientation, and the extremity of their political orientation (i.e., the distance to the midpoint of the scale, which represents centrist views). In line with past work (e.g., Caviola et al., 2019; Earp, McLoughlin, Monrad, Clark, & Crockett, 2021), results showed that women expressed greater moral concern than men, $b = -0.102$, $SE = 0.046$, 95% CI [−0.190, −0.013], $t(584) = 2.21$, $p = .027$. There were also significant associations between moral concern and age, $b = 0.013$, $SE = 0.005$, 95% CI [0.004, 0.022], $t(596) = 2.79$, $p = .005$, political orientation, $b = -0.203$, $SE = 0.051$, 95% CI [−0.298, −0.108], $t(598) = 3.97$, $p < .001$, and political extremity, $b = 0.157$, $SE = 0.070$, 95% CI [0.023, 0.292], $t(589) = 2.26$, $p = .025$. Older participants, more liberal participants, and participants with more extreme political views showed greater moral concern. We did not find

significant differences in moral concern between religious and nonreligious participants or between participants from different countries.

Finally, we explored if the positive association between more extreme political views and increased moral concern emerged on both sides of the political spectrum. Given that we found a positive association between more left-leaning political views and moral concern, and given that more participants in our sample placed themselves on the left of the political spectrum (56.45%) than on the right (15.66%), the positive effect of political extremity may indicate especially high levels of moral concern among people on the left, rather than an effect of political extremity per se. Adding an interaction term between political orientation (left vs. right) and political extremeness to the model revealed a significant effect, $b = -0.581$, $SE = 0.231$, 95% CI [−1.030, −0.133], $t(409) = 2.52$, $p = .012$. More extreme political views were associated with increased moral concern for participants on the left of the political spectrum ($n = 328$), $b = 0.342$, $SE = 0.119$, 95% CI [0.118, 0.567], $t(350) = 2.87$, $p = .004$, but not for participants on the right of the political spectrum ($n = 91$), $b = -0.230$, $SE = 0.205$, 95% CI [−0.613, 0.153], $t(91) = 1.12$, $p = .266$. Thus, the positive association between political extremity and moral concern across the political spectrum was driven by more left-leaning participants showing higher levels of moral concern.

3.3. Discussion

Study 2 showed that between-target differences (32%), between-judge differences (30%), and their interaction (29%) explained considerable amounts of variance in judgments of moral concern. Thus, we replicated the findings from Study 1 with larger and more diverse samples of judges and targets further highlighting the need for future research to consider both of these factors (and their interaction) when mapping people's circles of moral concern.

Importantly, we identified this pattern of results among participants from Australia, the United Kingdom, and the United States, suggesting that there are considerable cross-country similarities in which factors shape people's moral circles, at least in the three Western countries that were analyzed here. An analysis of the moral standing of all 54 targets revealed even more striking similarities across the three countries. Correlations between average ratings of moral concern were very strong, suggesting that, on average, the targets' relative moral standing was almost identical across the three countries.

4. General discussion

When do people deem others worthy of moral concern? Past work has primarily focused on the role of the target in shaping these judgments, examining how characteristics such as species category, perceived sentience and intelligence, and beauty of entities affect moral concern (Caviola et al., 2019; Gray et al., 2012; Klebl et al., 2021; Leach et al., 2021; Miralles et al., 2019; Piazza et al., 2014; Wilks et al., 2021). Although some studies have explored the role of individual differences (i.e., *who* is making the judgment; Crimston et al., 2016;

Waytz et al., 2019), fewer studies have examined potential interactions between target and judge characteristics in shaping moral concern (for exceptions, see Krings, Dhont, & Salmen, 2021; Leite et al., 2019; Waytz et al., 2019). We conducted a systematic exploration of how the characteristics of the target, the judge, and their interaction explain variation in moral concern. Our data comprise 78,048 judgments of more than 50 different targets from 836 participants across 4 countries.

We consistently find that each of the three components accounts for about one-third of the variance in judgments of moral concern. In other words, judgments of moral concern are influenced by characteristics of the target (who is being judged), characteristics of the judge (who is making the judgment), and their interaction. These findings have important implications for the study of moral judgments. When trying to understand whether certain people will grant moral standing to certain entities, a sole focus on target characteristics (e.g., their perceived intelligence or beauty), which has been common in existing work, may not yield accurate predictions. Specifically, the field has been primarily focused on measuring variability in moral concern that only accounts for about one-third of the total variance, with the other two-thirds largely ignored in these studies. Our findings show that, in order to accurately predict moral concern, researchers need to consider target *and* judge characteristics, as well as their interaction in their models. Without this wider scope, researchers might end up making broad claims about the importance of certain factors (e.g., beauty) in impacting moral concern even though this factor only plays a relatively minor role in determining moral judgments.

Currently, most theoretical approaches to understanding moral concern center around mind perception (i.e., the attribution of different mental capacities, such as the capacity to feel pleasure and pain; Gray et al., 2012; Gray, Gray, & Wegner, 2007; Leach et al., 2021). Our findings suggest that theoretical approaches may benefit from explicitly considering the role of the judge in shaping the link between mind perception and morality to offer a more comprehensive account of how we morally value others. In general, our findings show that any theoretical account that aims to provide an accurate description of moral inclusion needs to consider the role of the entity being judged, the role of the person making the judgment, and their interaction. Accounts that only focus on one level of analysis while ignoring the others cannot provide a complete and accurate account of moral inclusion.

Our findings support calls by both Bloom (2011) and Hester and Gray (2020) for an increased consideration of context in the study of moral psychology. Many (if not most) studies rely on simplified, abstract vignettes and hypothetical judgments and decisions that do not consider factors like the race, sex, and social relationships of the characters. However, these factors could be crucial in shaping everyday moral judgments. The current findings are in line with this view, showing that judgments of moral concern strongly depend on who judges whom. In fact, the variance decomposition approach could be used to better understand and quantify the importance of contextual factors in shaping various types of moral judgments.

Our findings replicated across two studies with participants from four countries. Between-judge differences played a somewhat smaller role in Study 1 compared to Study 2. One possible explanation is that the sample in Study 1 was less demographically diverse, which could have led to fewer differences in judgments of moral concern between participants.

Alternatively, methodological differences could also explain the different results. Participants in Study 1 only judged animal targets, while participants in Study 2 judged both animals and humans. It is possible that the absence of human targets could have led to more variability in judgments of moral concern. In line with this account, we find that people show more consensus when rating the moral status of humans compared to animals (see Supplementary Materials).

In general, additional analyses showed that variance component estimates differed substantially when restricting our analyses to different groups of targets (see Supplementary Materials). Target characteristics explained more variance in moral concern when judging human targets, while judge characteristics explained more variance when judging animal targets. This is again consistent with our observation that consensus is higher for human targets than for animals. The effect also appears to be driven by certain human targets, where family and friends are consistently granted maximum moral concern, villains (e.g., murderers) are consistently granted very little, and judgments for other human targets (e.g., a head of state, a member of the opposing political party) were more variable across participants.

Although the key goal of the current investigation was to examine the relative importance of target and judge characteristics (and their interaction) in general, we also explored associations between moral concern and specific target and judge characteristics. Across both studies, we found that companion animals were valued more than food animals, and both were valued more than pests (for similar results, see Leite et al., 2019; Piazza et al., 2014). In Study 2, we included 24 targets used in previous work on the moral circle (Crimston et al., 2016) and found an almost identical pattern of results: Participants showed the greatest moral concern for family and friends (e.g., spouses), followed by stigmatized targets (e.g., refugees), in-group targets (e.g., coworkers), revered targets (e.g., charity workers), out-group (e.g., foreign citizens), the environment (e.g., coral reefs), plants (e.g., apple trees), and villains (e.g., murderers). The only difference in the relative ranking of these groups was that stigmatized groups were afforded more moral concern than all entities except family and friends, while previous studies found that they were placed between revered and out-group targets (Crimston et al., 2016). We also found that neither religiosity nor nationality predicted differences in moral concern. The latter finding is in line with previous work showing that, in a much larger and more diverse sample of countries, cross-country differences in moral concern were relatively small (Kirkland et al., 2022). However, we did identify a number of other judge characteristics that influenced moral concern. Replicating previous work (e.g., Caviola et al., 2019; Waytz et al., 2019), we found that older people, women, and those on the political left tended to show greater moral concern.

4.1. Limitations and future directions

Although we included participants from four different countries in our studies, it is important to note that all participants were sampled from WEIRD countries, limiting the generalizability of the results (Henrich, Heine, & Norenzayan, 2010; Nielsen, Haun, Kärtner, & Legare, 2017). Much more work is needed to explore similarities and differences in people's

moral circle across a larger and more diverse set of countries (see Awad et al., 2018; Kirkland et al., 2022).

Additionally, we focused on the relative importance of judge and target characteristics in the current studies. Although these two factors and their interaction explained most variance in moral concern, other factors may also be important. As discussed earlier, framing effects appear to play a role in how we ascribe moral worth to different entities—we find that including both humans and animals as targets leads to lower overall moral concern for animals than if animals are rated alone (see also Laham, 2009). The set of targets under consideration also appears to impact the amount of variance in judgments that is explained by judge and target characteristics. Between-target differences accounted for 39% of the variance in Study 1 when participants only rated animals. When restricting our analyses to the same animal targets in Study 2, where participants also rated various human targets, between-target differences only accounted for 18% of the variance (see Supplementary Materials). These results suggest that participants showed more consensus in their judgments (i.e., more variance could be explained by which target was judged) when rating the present set of animals in isolation, rather than together with various human targets. It should be noted, however, that the observed differences between studies could have also resulted from the different participant samples that were recruited. Still, the results suggest that judgments of moral concern may depend on which targets are salient to the person making the judgment, which means that any pattern in judgments from one context may not generalize to other contexts. Understanding the role of framing effects and other contextual factors is a critical area for future research in understanding the determinants of moral concern.

Finally, results may also differ depending on the type of moral concern measured. For example, Goodwin and Landy (2014) examined how positive and negative rights influence moral status. The authors demonstrated that people apply positive and negative rights differently to different segments of the population, for example, by granting equal negative rights regardless of age, but granting greater positive rights to young people. Similar questions can be raised about other methods, such as the use of sacrificial trade-offs (e.g., deciding which of two targets to save) and ratings of moral concern. To examine these effects, future work should systematically explore how the conceptualization and presentation of questions about moral concern shape the moral worth people ascribe to different beings.

Perhaps the most ambitious and important direction for future research is to build a more comprehensive model of the factors that shape the moral circle. The present findings suggest that this requires the simultaneous consideration of target and judge characteristics (and their interactions). The ideal study would feature a large, diverse sample of participants judging a large, diverse set of targets, while many factors that are thought to influence judgments of moral concern at the target level (perceived sentience, intelligence, and beauty, species membership, similarity to humans, etc.) and at the judge level (empathy, compassion, personality, speciesism, political orientation, gender, age, etc.) are assessed. While this represents an ambitious undertaking that goes beyond the scope of any other studies on this topic thus far, recent developments toward team science and large-scale, cross-cultural collaboration may facilitate such an endeavor (Kirkland et al., 2022; Moshontz et al., 2018).

5. Conclusion

Across two studies with a large sample ($N = 836$) and a broad set of stimuli, we examined how the characteristics of the target, characteristics of the judge, and their interaction shape judgments of moral concern. We find that each of these factors accounts for about one-third of the variance, suggesting that past theoretical and empirical work has focused too heavily on the role of the target. Going forward, research should pay more attention to the role of judge characteristics and interactions between judge and target characteristics in shaping moral concern. Models that aim to predict if a certain person will grant moral standing to a certain target will need to account for all three factors.

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Conflict of interest

No conflict of interest to disclose.

Open Research Badges

This article has earned Open Data and Open Materials badges. Data are available at osf.io/8cjn6/ and materials are available at https://osf.io/8cjn6/.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.